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**MITIGATION PLAN FOR PHASE III INVESTIGATIONS  
AT THE BEEHIVE SITE (18HO206),  
HOWARD COUNTY, MARYLAND**

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**PREPARED FOR:**

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MITIGATION PLAN FOR PHASE III INVESTIGATIONS  
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The Beehive Site (18HO206) will be impacted by the proposed Maryland Department of Transportation/State Highway Administration's Maryland Route 100 Wetland Mitigation Project. Based upon Phase II evaluative testing, Site 18HO206 is considered to be eligible for listing on the National Register of Historic Places under Criterion d by consensus determination between the Maryland Historical Trust and the Federal Highway Administration. Its significance lies wholly in its archeological value to yield information important in prehistory (36CFR60). The data embodied in the artifacts, spatial relationships among the artifacts, and from their environmental context, comprise the information that lends the property its significance. Extracting the data and making it available for study is the most desirable treatment option to preserve the property's value in the public interest.

The site is deeply buried, but not particularly complex. The artifact assemblage recovered during Phase II testing indicates that neither the overall density of artifacts nor their diversity is so great that extraordinary excavation or analytical techniques must be employed to preserve their value. Stratigraphic relationships of the cultural deposits are discernable, and geomorphological reconstruction of this setting is practicable. The Beehive site is considerably more amenable to meaningful pattern recognition, and less structurally complex than other tested and excavated Coastal Plain archeological sites (c.f., Site 18HO203, the Higgins Site [18AN489]).

Site 18HO206 cannot be practically preserved in place. To accomplish the intended result of wetland creation in response to regulatory obligations, the engineering design cannot be altered to lessen or avoid impacts to the site. An extensive search of potential mitigation sites that meet agency regulatory criteria was undertaken by the State Highway Administration and resulted in the acceptance of a limited number of sites that provide the minimum acreage required to mitigate loss from the ongoing construction of Maryland Route 100. The Beehive property is already state-owned. If other alternatives were available, the cost and time to complete additional environmental and cultural resources studies, and engineering, design and real estate expenditures, would outweigh any benefit preservation of 18HO206 would accrue in the public interest. It is therefore recommended that the site be excavated to mitigate the adverse effect of the proposed construction.

The proposed data recovery plan has been developed in accordance with State and Federal standards and guidelines including: the National Historic Preservation Act of 1966 (as amended), Executive Order 11593, the Archaeological and Historical Preservation Act of 1974, The Archaeological Resources Protection Act of 1979 (as amended), and Title 36 of the Code of Federal Regulations, Parts 60-66 and 800, as appropriate. All proposed mitigative efforts will adhere to *Guidelines for Archeological Investigations in Maryland* (McNamara 1981), to the draft *Standards and Guidelines for Archeological Investigations in Maryland* (Shaffer and Cole 1993), to *Archeology and Historic Preservation: The Secretary of the Interior's Standards and Guidelines*, and to standards promulgated by the Maryland Department of Transportation/State Highway Administration. This mitigation plan was developed in accordance with the Advisory Council on Historic Preservation's *Treatment of Archeological Properties: A Handbook*.

#### Description of Project and Site 18HO206

Site 18HO206, located in eastern Howard County, is a deeply buried, stratified prehistoric site located along the floodplain and associated terraces of a tributary of Shallow Run (Figure 1). Construction of the proposed 0.95 ha (2.4 acre) off-channel wetland mitigation area will result in impacts from subsurface grading, construction of access roads, and soil wasting (Figure 2). Although the locations of access roads

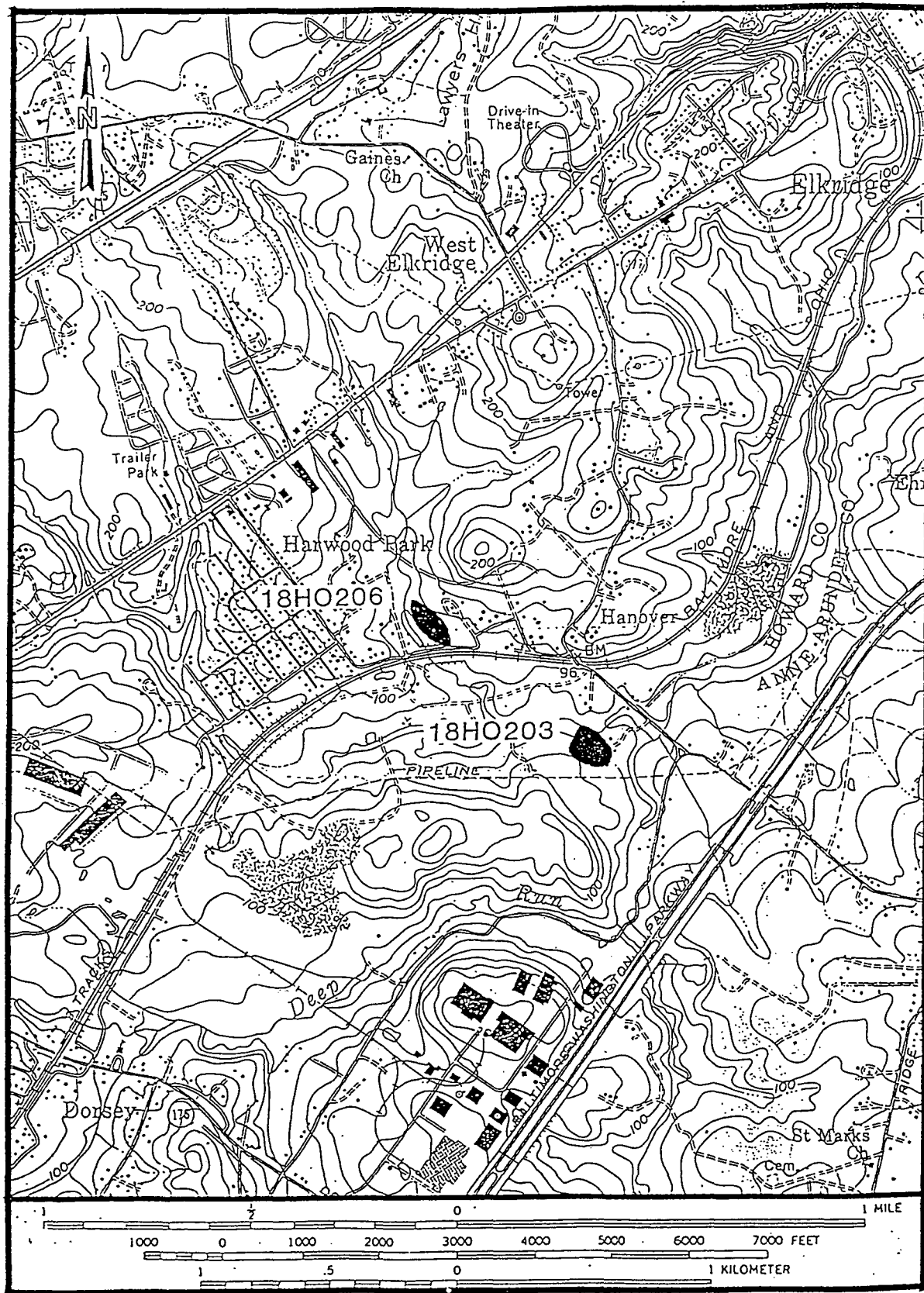


Figure 1. Excerpt from the USGS Relay, Maryland Quadrangle, Showing the Locations of Sites 18HO203 and 18HO206

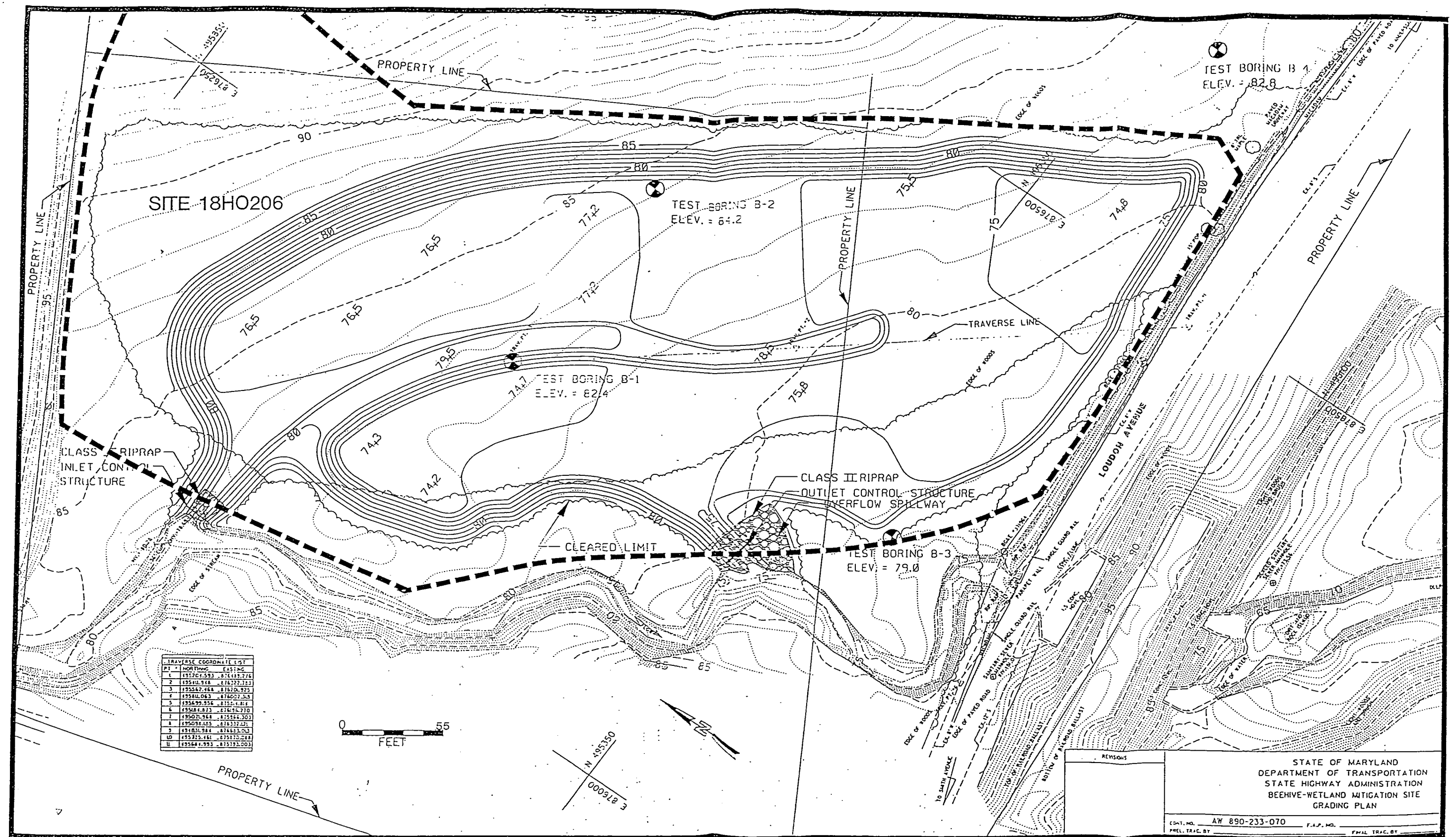


Figure 2. Proposed Construction Plans for the Beehive Site Wetland Mitigation Area, Showing Site Boundaries

and soil wasting areas have not been specified, all work will be confined to the area of potential effect that was subjected to previous archeological studies.

The site is characterized as a multi-component short-term resource procurement site and possible campsite. The principal site activity focused on the procurement and early stage processing of lithic material, specifically riverine deposits of quartz and quartzite cobbles. The topography of Site 18HO206 during the periods of prehistoric occupation consisted of a low floodplain that sloped gently up towards a low terrace in the eastern portion of the site. During the earliest period of prehistoric occupation at the site, its western margin may have been defined by a network of gravel and point bars that resulted from late Pleistocene/early Holocene outwash. The stream channel was better defined during subsequent occupations of the developing floodplain east of the stream. Prehistoric materials were recovered from both undisturbed contexts that were buried beneath deep alluvial deposits, and from a disturbed plowzone in the vicinity of the low terrace.

In addition to the plowzone deposit, the prehistoric components included:

- (1) Buried A horizon - at a depth of 75-110 cmbs, this deposit contained discrete concentrations of lithic debris. The deposit extended across much of the site's floodplain and was truncated by historic plowing in the area of the low terrace;
- (2) Buried B horizon - at a depth of 110+ cmbs, this deposit was identified in a few test units in the center of the floodplain. One feature, a shallow rock-filled hearth or pit, as well as a discrete concentration of lithic debris, is associated with this component; and,
- (3) Gravel Bar Deposit - at a depth of 90-130 cmbs, this deposit consisted of gravels and sands that contained a dense concentration of primary and secondary lithic debris, as well as a number of flakes of non-local rhyolite. This deposit extended below the current water table. These artifacts showed little evidence of transport or redeposition.

#### Phase IB Survey

A Phase IB archeological survey was conducted by MDOT/SHA archeologists during 1992 (Barse 1993). During the Phase IB investigations, a total of 58 shovel tests was excavated at 10 and 20 m intervals within Site 18HO206. On the floodplain, an intact buried A horizon (Ab) was encountered in 19 of the 21 shovel tests; prehistoric artifacts were recovered from eight of these shovel tests. The horizon underlying this Ab horizon yielded lithic debitage in three shovel tests. Several of these tests revealed dense gravel deposits below the Ab horizon; in one of these shovel tests a concentration of lithic debitage was recovered to a depth of at least 130 cmbs.

A lithic scatter was obtained from the plowzone on a terrace that marked the northeastern limits of the site; two moderate density concentrations were identified in this setting. In addition, lithic debris and historic materials were scattered in the plowzone across the floodplain. One quartz stemmed projectile point (probably Savannah River or Bare Island) was recovered from the terrace area.

The Phase IB investigations characterized Site 18HO206 as a possible Late Archaic period lithic procurement/quarrying site. The topographic variation across the site and the apparent presence of prehistoric cultural material in sub-plowzone contexts implied that the site might contain important information relative to the prehistoric occupation of the Western Shore of Maryland. The Phase IB report recommended intensive Phase II evaluatory testing of Site 18HO206, especially those portions of the site that contained undisturbed prehistoric materials (Barse 1993:38).

## Phase II Evaluatory Testing

During 1993, Phase II evaluatory testing was conducted by R. Christopher Goodwin & Associates, Inc. (Polglase et al. 1993). These investigations characterized Site 18HO206 as a multi-component prehistoric site with at least two well defined short-term occupations focused on lithic resource procurement. Deposits of quartz and quartzite cobbles exposed along the stream margins adjacent to the site apparently were exploited. The topography of Site 18HO206 during much of the period of prehistoric occupation consisted of a low floodplain, gradually rising toward the northeast to form a low terrace. Stratigraphic profiles within the portion of the floodplain nearest the present stream channel (the active floodplain) consistently have gravel deposits at their base. Test units placed farther back from the present stream channel (the mid-range floodplain) do not exhibit these gravel deposits. The active floodplain, mid-range floodplain, and the low terrace were examined separately during analyses of the site. Although the Ab horizon extended across the entire floodplain, the occupational horizons below this Ab could not be linked stratigraphically. Finally, prehistoric materials recovered from the terrace were disturbed by plowing.

The earliest prehistoric activity at the site centered on a gravel bar adjacent to the stream channel. A poorly developed floodplain may have extended toward the low terrace to the east. Although this component has not yet been dated, the artifact assemblage and its focus on procurement of large riverine cobbles in a gravel bar setting are similar to the deepest component defined at Site 18HO203 (Schultz Farm #1), which has been ascribed to the early Holocene.

Subsequently, a newly formed, yet stable, floodplain developed over the gravel bars. This latter occupation may date from the middle to late Holocene Transition (Late Archaic Period). The topography of the site at this time consisted of a well developed floodplain gradually rising to the east, where it abutted the Low Terrace. The convergence of the Ab horizon onto the terrace is documented in the stratigraphic sequence of Phase II Test Units 15/16, in which the Ab horizon slopes upward until it is truncated by the plowzone. This suggests that the prehistoric material from the site's terrace plowzone includes the same component as found in the floodplain Ab horizon. Concentrations of lithic materials in the plowzone indicate that the western terrace edge was a primary prehistoric activity locus.

Successive flooding since that putative Late Archaic occupation has resulted in the deposition of significant alluvial deposits over the prehistoric surface; those deposits have preserved that former surface as an Ab horizon on the floodplain. The presence of an intact feature (F1301) and discrete lithic concentrations support the integrity of the buried prehistoric surfaces in the mid-range floodplain.

The erosion of terrace soils relocated some lithic material onto the floodplain, where it became trapped within the alluvial sediments (1C horizon). Additional prehistoric and historic material not associated with cultural activities at 18HO206 also may have been washed in from off-site. Historic conversion of the land to agricultural usage further disturbed the remaining lithic materials on the terrace, scattering them within the plowzone.

Demonstrable morphological differentiation in the types of flakes recovered from the site's geomorphic zones is indicative of different types of reduction activities. For example, Test Units 1/2 reflected a primary resource procurement area wherein stream cobbles were tested to identify suitable material types. Potentially usable material and partially reduced cobbles appear to have been retained and transported to the drier mid-range floodplain and terrace base for secondary evaluation and further reduction. Final reduction of lithic material into transportable cores, blanks, and preforms probably occurred on the terrace.

The overwhelming majority of artifacts from the site are quartzite and quartz; most of this material originated from the stream bed as large cobbles. The small volume of rhyolite flakes and the lone jasper flake result from the reduction of blanks and sharpening of tools brought onto the site. The single projectile point/knife from the Phase IB survey indicates activities (e.g., food or tool processing or maintenance) not

associated directly with the site's primary lithic reduction activities; rather, complementary short-term campsite activities can be posited from these data.

### Project Description

The proposed Wetlands Mitigation Project will impact Site 18HO206 directly through grading for the basin, by construction of access roads, and by creation of soil wasting piles. The Maryland State Highway Administration will create approximately 2.4 acres of densely vegetated emergent wetlands at the Beehive property to mitigate loss of wetland acreage from construction of Maryland Route 100 from Interstate 95 to Interstate 97 (Maryland Route 3) (Figure 2). The wetland shall function as an off-channel detention system for monthly storm events. Inlet and outlet structures will connect directly to an unnamed tributary of Shallow Run. The invert of the inlet structure to the created wetland shall be placed at least one foot below the monthly storm elevation. The bottom contour of the created wetland shall not exceed a one foot grade along the water treatment flow path and shall be designed to retain no more than two feet of standing water. The created wetland shall be graded down from the present land surface 3 - 10 ft, to an elevation that will be inundated or saturated to the surface by groundwater or surface water for a period of at least 20 consecutive days during the growing season. The graded slopes between the created wetland and surrounding uplands shall not exceed 35 per cent. One-hundred per cent of Site 18HO206 will be impacted by proposed construction.

### **Significance Statement and Research Questions**

Site 18HO206 is a deeply stratified, multi-component prehistoric lithic procurement and possible camp site. The principal focus of these short-term occupations was the procurement and early-stage processing of local quartz and quartzite cobbles that apparently were obtained from the nearby stream bed. Limited evidence of cutting and scraping activities indicates that the prehistoric utilization of the site was not solely dedicated to lithic extraction. At least two, possibly three, well-defined stratified components were identified within the floodplain portions of the site during the Phase II evaluation. Data recovered from the site indicate that these components retain a very high degree of integrity; occupational horizons are contained within distinct stratigraphic units, these horizons are buried well beneath modern disturbances to the site (up to 70 cmbs), and the sub-assemblages recovered from different portions of the site exhibit functional variation.

The site's upper components, associated with a buried A (Ab) and Bw horizons, may date from the Late Archaic Period; a Savannah River/Bare Island point was recovered from possibly associated contexts on the terrace. The lower components, associated with the 2C1 and 2C2 horizons are presumed to be early to middle Holocene in age. Thus, the archeological components at Site 18HO206 fall, at a minimum, into the following Maryland Historic Contexts: Middle Archaic (6,000 - 4,000 B.C.); and Late Archaic (4,000 - 2,000 B.C.) (Weissman 1986:253). Data recovered indicate that Site 18HO206 can address a variety of research questions related to local and regional lithic procurement strategies, lithic technology, subsistence and environment, and settlement patterns.

Although numerous sites have been identified within the Deep Run drainage system, few lithic extraction sites are known and only one (18AN579) previously has been studied to the Phase II level (Wheaton and Reed 1989). Sites in similar settings (gravel bar/low floodplain) are not well-studied. Previous archeological investigations of Site 18PR94 (LeeDecker and Holt 1991) documented the use of gravel bar deposits by Archaic Period occupants of the site, though lithic procurement was not the primary activity at the site. In contrast, the identified prehistoric components at Site 18HO206 are dominated by procurement activities. The vertical and horizontal separation between these components provides an opportunity to study prehistoric lithic technology from both synchronic and diachronic perspectives.

A series of specific research questions that may be addressed at the Beehive site (18HO206) are posed and discussed below. The relevance of each question and evidence that they might be answered by data recovery at the site are reviewed briefly. The appropriate prehistoric period themes from Maryland's State Plan (Weissman 1986:255-256) are noted in brackets, following each research question.

**#1 - What diagnostic artifacts are found in association with one another? In addition to projectile points, can other temporally sensitive artifacts and/or reduction strategies be defined? [Technology]**

The stratigraphic and spatial integrity of Site 18HO206 affords an excellent opportunity to address issues related to the development of local and regional prehistoric chronology. Deeply stratified Archaic Period sites are relatively rare in the Piedmont/Fall Line region and in the Mid-Atlantic in general. Contextual study of known diagnostic material will help to refine regional chronologies. Detailed study of well controlled assemblages (e.g., the site's large cobble reduction episodes) also will provide information to assist in the definition of additional temporal markers in the region. For example, recent research in the region has led to a series of debates on the seriation and dating of Late Archaic projectile point forms (compare Polglase et al. 1990 and Ebright 1992 on the dates of Otter Creek points; see Polglase et al. 1990 and 1991 for discussions of bipolar pebble/cobble technology in the Little Patuxent drainage). Since the chronological relationship between recognizable diagnostic artifacts remains in flux, controlled stratigraphic excavations of Archaic period contexts remain a critical research concern in the region.

**#2 - What lithic procurement and reduction strategies were employed at the site? Do these strategies differ over time? What kinds of groups were involved in the extraction and reduction of quartz cobbles at the site? [Technology; Demography]**

Quarry sites are an important, yet often neglected, resource for studying lithic extraction and reduction strategies. These sites are often the only location in which the earliest stages of reduction can be examined. Core technologies and reduction strategies evident at such sites may be temporally or culturally distinctive (Johnson and Morrow 1987). However, the ascription of specific timeframes to lithic reduction strategies requires tight temporal control, combined with careful descriptions of the diagnostic features within the relevant assemblage (Polglase et al. 1990; Neumann and Polglase 1992; Polglase 1989).

Data recovered during Phase II testing at Site 18HO206 indicate that the site will provide information regarding these issues. *Cursory analysis of the lithic debitage and cores indicated that a variety of reduction techniques and strategies were employed at the site; some of these reduction strategies are distinctive from previously defined reduction sequences documented in the archeological literature of Maryland's Western Shore (c.f., Neumann and Polglase 1992; Polglase et al. 1992; Maymon et al. 1993).* Much of the prehistoric activity at Site 18HO206 was focused on core preparation and the production of large flakes from large cobbles; however, a small number of biface fragments also was recovered. Preliminary examination of a selection of cores from the site identified bipolar, irregular, and bifacial cores. Spatial variation in the amount of cortical flakes and lithic tool assemblages suggests that various reduction activities, and/or processing/maintenance activities occurred in distinct portions of the site. The suite of activities tentatively identified at the site suggest varied use consistent with short-term campsites. At the Russett 21 Site (18AN685), such short-term camps were hypothesized to reflect seasonal mast procurement episodes that were incorporated into an ad hoc round of lithic procurement (Polglase et al. 1990).

The procurement/reduction strategies employed within each of the two clearly identified occupations of the site will be reconstructed; particular emphasis will be given to changes in reduction techniques, to intra-site patterning of activities, and to the diversity of activities represented in the assemblages from each component. These functional reconstructions will be placed within the appropriate temporal and regional frameworks.



**# 3 - How do the site's spatially discrete activity areas relate to site organization and structuring? Are these intra-site patterns consistent through time? How does the internal structure of Site 18HO206 compare or contrast with other cobble quarries (such as 18AN579) or sites in which cobbles within gravel bar deposits were exploited (i.e., 18PR94)? [Technology; Settlement]**

The level of integrity retained within the site's deeply stratified components will afford an opportunity to conduct detailed spatial analyses. Such analyses provide important information regarding the organization of space within a quarry-related site; information which will assist in understanding the spatial dimensions of lithic reduction strategies (c.f., Site 18BA433 [Maymon et al. 1993] and Site 18AN685 [Polglase et al. 1990]). Phase II testing encountered evidence indicating that the site retains distinct loci of prehistoric activity; these loci reflect functional variations in the lithic reductive and other activities across the floodplain. For instance, the initial stages of lithic reduction appear to have occurred nearest the stream, with more diverse activities occurring on those portions of the floodplain nearer the terrace (and probably on the terrace). Although debitage, cores, and hammerstones are prominent in sub-assemblages across the entire site, the smaller average flake size, the lower percentage of cortical flakes, biface fragment, and feature differentiate the mid-range floodplain from the active floodplain portion of the Ab horizon component. Similarly, the component associated with the 2C horizons may be functionally distinct; a high percentage of utilized/retouched flake tools was recovered from the near-stream portions.

The organization of procurement and reduction of lithic materials may vary across geographical, cultural and temporal boundaries. Comparison of the internal structure of Site 18HO206 with similar sites will help assess the degree to which the activities at the sites are unique or shared by other sites in the region. Preliminary examination of settlement data during Phase II research indicated that quartz cobble reduction was common in the Deep Run drainage. Research at the Lyonsfield III Site (18BA433) suggests that at least some of these quarry-related sites were not solely lithic extraction sites; evidence of short-term habitation also is present in that locus (Maymon et al. 1993). The high degree of integrity retained by the prehistoric quarry-related components at Site 18HO206 indicates that such comparisons between individual components at the site and with similar sites in the region will be possible.

**#4 - What variables may be common to quarry-focused sites in the Piedmont/Coastal Plain transition zone? Is there a correlation between the locations of different lithic reduction activity areas and site-specific environmental variables? Was soil drainage an important variable in the selection of locations for short-term camps during the Late Archaic period, and does it appear to be an important factor in the siting of short-term camps in the Fall Line zone in general? [Settlement; Environmental Adaptation]**

Although few quarry sites have been subject to detailed study in the Mid-Atlantic region, such sites often are presumed to have played an important role in defining prehistoric settlement patterns (i.e., Custer 1984, 1989; Gardner 1979, 1983; Stewart 1980). The procurement of suitable stone for stone tool manufacture was a serious and constant challenge to prehistoric peoples. This problem was solved in disparate ways by various cultures. Quartz minerals appear to have been a preferred raw material during the Late Archaic and Late Woodland periods in the Middle Atlantic region (Steponaitis 1987; Custer 1992) and beyond (Dincauze 1976). Those procurement strategies and settlement systems probably differed markedly from those cultural periods in which people relied more on exotic materials, such as chert and rhyolite (e.g., the early Holocene, late Middle Woodland). Quartz and quartzite are common throughout the region and occur in cobble form in stream beds and as outcrops in eroded upland areas. High quality quartz may have been distributed unevenly across the landscape, necessitating specific procurement efforts. Thus, Late Archaic lithic procurement and settlement systems may have been different from the Middle Woodland, when rhyolite use was at its peak (Polglase and Neumann 1991a).

The place of quartz and quartzite quarry sites within these settlement systems is poorly understood. Additional study of Site 18HO206 will provide a better understanding of the nature of these localized quarry activities and thereby provide crucial information regarding a little studied site type in the Mid-Atlantic region. Such research also will begin to place localized lithic reduction strategies within larger-scale regional procurement systems.

This research topic also must take into consideration the distribution of other resources on the prehistoric landscape that might have conditioned the lithic procurement system (c.f., Polglase 1991). For example, the availability of soils to support productive oak/chestnut stands may have been crucial to permit sufficient population growth in an area to warrant extensive reuse of quarry sites (Polglase et al. 1990). In addition, the character of the Deep Run/Shallow Run drainage system may have provided a limited number of settings where stream bed quarries could be located near temporary camps. In other words, are the floodplain temporary camps recognized at 18HO206 and 18AN579 unusual to the near-Fall Line area? Do local factors of floodplain development during the middle to late Holocene transition create new opportunities for the exploitation of the outwash deposits at the base of the Fall Line? Such issues can be addressed through further geomorphological examination of the Beehive Site's floodplain, relative to formation processes that encompassed the Deep Run/Shallow Run drainage system.

**#5 - At what time of the year was the site occupied? What might the vegetative community in the vicinity of the site be composed of? What kind of plant and animal resources were exploited by the occupants of the site? [Environmental Adaptation; Settlement]**

Prehistoric subsistence patterns are poorly known in the Mid-Atlantic region. Botanical and faunal material often are preserved poorly in the acidic soils of the region and the recovery of carbonized materials from features only recently has become widespread with the proliferation of floatation techniques. Analysis of fossil pollen and phytoliths, although rarely applied to site specific research in the Mid-Atlantic region, can provide data regarding local environmental conditions during the occupation of the site.

The presence of a feature and wood charcoal within stratified components at the site provide an opportunity for the reconstruction of prehistoric subsistence and the environment. The wood charcoal, carbonized nuts and seeds present at the site are valuable in the reconstruction of local paleo-environment and subsistence patterns. Identification of tree and plant species allow interpretation of seasonality, local vegetative communities, and subsistence practices. The determination of the season(s) of occupation of a site can be crucial for developing holistic models of the adaptive strategies that were developed by prehistoric Native Americans relative to environmental constraints; such models then can be tied into local and regional settlement systems. Phase III excavation and analytical efforts will be directed towards the recovery of archeo-botanical remains, and possibly fossil pollen and/or phytoliths to permit such paleoenvironmental and cultural reconstruction. Blood residue analysis will allow for the identification of animal species hunted or butchered by the occupants of the site.

The presence of a visible buried A horizon and entombed wetland vegetation within the silty clay immediately above the prehistoric occupation surface (Ab horizon) indicate the possibility that micro-botanical remains were preserved. Such micro-botanical remains were found preserved at the Higgins site (Ebright 1992). The analysis of features and sediments at that site (Seward 1992) provide a baseline with which to interpret the results of the proposed analyses at Site 18HO206.

**#6 - Do vegetational/environmental changes in the vicinity of Site 18HO206 reflect broadscale regional patterns as reconstructed by Carbone (1976), Custer (1989), and others? How do the timing and character of local vegetative changes compare with regional patterns? [Environmental Adaptation]**

The middle to late Holocene has been characterized as a time of extreme climatic oscillations, including maximum Holocene warm/dry conditions (the xerothermic). These environmental changes have been viewed as the major cause of rapid and widespread changes in settlement/subsistence patterns, social organization, and technologies in the Middle Atlantic region (Carbone 1976; Custer 1989; Steponaitis 1987). The mid-postglacial xerothermic has been related to the rate of river channel incision or floodplain development, aeolian deposition, and other depositional discontinuities on archeological sites. However, recent paleoenvironmental research indicates that the timing and character of such changes may be locally variable (Joyce 1988; Nicholas 1988). Coastal, riverine, and lacustrine areas developed micro-environments that may have been at variance with broadscale reconstructions. Recognition of this variability has had a impact on current reconstructions of settlement/subsistence patterns during the early Holocene in the Northeast (Nicholas 1983; Nicholas and Handsman 1984; Nicholas 1988; Joyce 1988). Examination of macro (seed and charcoal) and micro-botanical (fossil pollen or phytoliths) material from Site 18HO206 can help to clarify the environmental conditions that pertained to Maryland's Western Shore during the site's period of prehistoric occupation. If such data are available, they can be compared to generalized reconstructions for the region.

#### Data Requirements

Mitigation of project impacts will require sampling of the site's significant prehistoric components (the Ab and 2C horizon related components in the floodplain) combined with a suite of lithic analyses designed to describe fully the range of activities, and the spatial organization of the prehistoric occupations. The environmental background for the occupations also will be addressed through examination of macro-botanical materials, and fossil pollen and/or phytoliths, if available and appropriate. The field techniques will need to address the following requirements: (1) provide more extensive sampling of the site's floodplain to identify the most significant activity areas; (2) collect representative sets of lithic material from primary and secondary lithic reduction stations and possible campsite loci, such as that found in the vicinity of Feature 1301; (3) examine the low terrace area for sub-plowzone features that might support the dating of that component; (4) define more accurately the geomorphological relationship between the Ab and 2C horizons on different portions of the floodplain and the component lying on the terrace; (5) collect representative botanical data from the prehistoric components; (6) excavate sizable horizontal exposures within the floodplain that might expose features and activity areas in each component.

Laboratory analyses of materials recovered during the mitigative excavations will need to address the following research needs: (1) describe intensively the range of lithic reduction stages encompassed within the sampled activity areas; (2) provide a definitive morphological description of any distinctive classes of flaked tools or cores recovered from securely dated prehistoric contexts; (3) provide a detailed explication of the spatial relationships between the site's activity areas and within individual behavioral loci; (4) describe the conditions and geomorphological factors that led to the formation of this site; (5) place the lithic reduction strategy and the site's occupational loci within a relevant, chronologically-sensitive, reconstruction of subsistence and settlement systems for the Western Shore's near-Fall Line zone; and (6) reconstruct the local environment at the time of occupation and compare it with regional reconstructions.

#### Research Design

The prehistoric deposits at Site 18HO206 represent a Late Archaic occupation. Additional periods of occupation, including a possible early to middle Holocene deposit, may be present in the gravel bar component. Phase II investigations revealed the remains of primary and secondary lithic processing, evidence of other activities that required retouched unifaces and flake tools, and the presence of an intact activity surface with associated features.

As the above-cited significance statement indicates, Site 18HO206 retains important information for the reconstruction of prehistoric lifeways in the near-Fall Line zone of Maryland's Western Shore. Such data are unique among the documented archeological database for the area. Although such data have been characterized at the Phase II level of analysis for 18HO206, 18HO203, and 18AN579, no prehistoric sites of this type have been documented fully in accordance with archeological data recovery standards. Such mitigative-level analyses are needed critically to provide an accurate understanding of the role of localized lithic procurement strategies in the subsistence/settlement systems of the Western Shore's Native American populations and for fleshing-out the culture history of the region. In addition, such information can serve as a much needed baseline for comparison with and assessment of other quarry-related sites in the region.

The mitigation efforts will concentrate on the intact buried components of the site (Figure 3). Only limited additional testing is warranted in the terrace area; this will take the form of stripping with a backhoe equipped with a clean-up blade of an approximate 20 x 40 m area to determine if prehistoric features are present. Historic alluvial and colluvial deposits also may be stripped mechanically from above the buried cultural horizons, allowing the hand excavation of sampling blocks. Such stripping will be limited to the immediate area of the planned units or blocks and will be monitored by the site field supervisor. Additional geomorphological sampling will be undertaken to assist in defining the temporal relationship between the site's components and to provide data relevant to the formation of the site's geomorphological features. Samples of macro-botanical material will be recovered to permit an environmental reconstruction for the periods of occupation. Soil samples for micro-botanical analyses also will be collected.

To date, a 22 m<sup>2</sup> portion of the site has been excavated. Phase III data recovery will expose another 64 m<sup>2</sup> of the site. Phase II testing found that the Ab horizon on the terrace was located at a depth of 75 - 110 cmbs; the gravel bar deposits are at a depth of 90 -130 cmbs.

## **Methods and Techniques**

### Field Design and Methods

Field methods will consist of four parts: (1) emplacement of a datum, "bush-hogging" of brush, and preparation of a topographic map with at least 1.00 m contour intervals; (2) excavation of 16 1 x 1 m test units on the floodplain; (3) excavation of two 10 m-long backhoe trenches to provide geomorphological control; and (4) excavation of three 4 x 4 m excavation blocks based on the results of the initial sampling program.

The 16 1 x 1 m test units are designed to provide more extensive sampling of the site's floodplain components; they will be excavated individually or as part of 1 x 2 m units. For most of these units, historic alluvium and colluvium will be removed mechanically to 10 - 15 cm above the intact cultural strata, at which point the cultural strata will be removed by hand. The use of these smaller testing units is designed to sample the significant strata rapidly and efficiently, so that the larger block excavations can be directed at the most important activity areas. A minimum of four of the units will be used to sample the areas that will be examined with the backhoe trenches. The general areas planned for the unit excavations are illustrated in Figure 3. Four of these units will be held in reserve until after the backhoe trenching, to allow for further study of geomorphic and cultural features revealed in that testing. It should be noted that the Principal Investigator will retain sufficient discretion to modify field methods, as circumstances warrant; such modifications will be approved by MDOT/SHA staff in advance.

The four phases of field testing will be undertaken in an expeditious manner. Excavation of the test units will be initiated immediately upon completion of the "bush-hogging" and the contour map preparation. The units to be placed in the footprint of the planned backhoe trenches will be undertaken first; the excavation of the trenches will proceed as soon as these units are completed. Excavation of additional test units, the geomorphological documentation of the backhoe trenches, and the stripping of the 20 x 40 m area

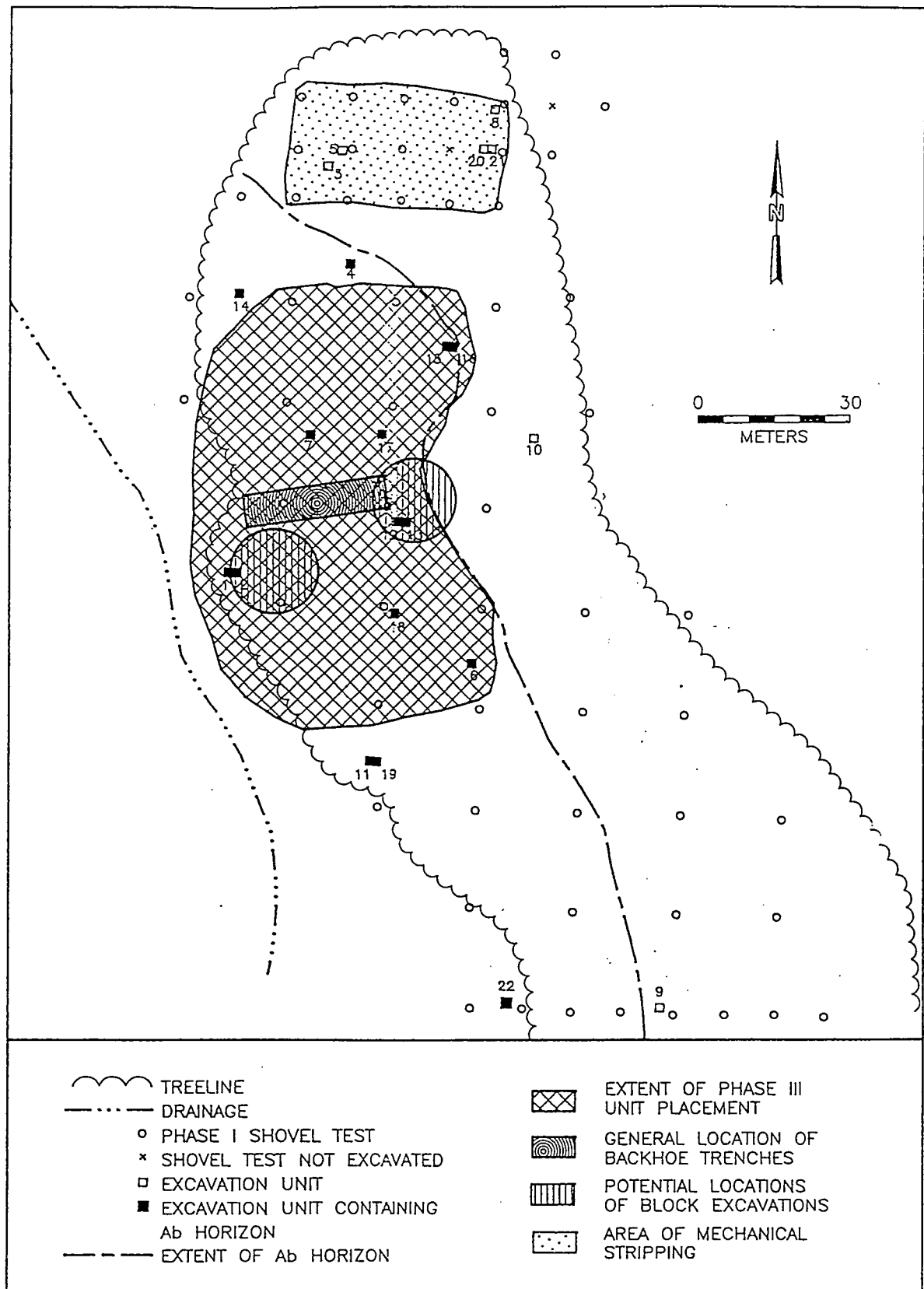


Figure 3. Proposed Mitigation at Site 18HO206

on the Low Terrace will move forward at the same time. The results of the unit testing and the trench documentation will provide data for the final determination on the placement of the three excavation blocks. The placement of the block excavations will be decided in consultation with MDOT/SHA staff and the Maryland Historical Trust.

The two backhoe trenches will be excavated on an east-west axis and will be placed to provide a general geomorphological cross-section of the site across the floodplain (Figure 3). The two trenches will provide a profile across the floodplain; however, they may be offset up to 5 m to avoid areas of disturbance or previously examined areas. The trenches are designed to clarify the geomorphological relationship between the site's components and to expose datable natural deposits. The profiles of these trenches will be prepared by a professional geomorphologist and/or pedologist familiar with the types of formation found at the site. Pedological samples will be taken of representative deposits in order to permit a detailed description of site formation processes.

The block excavation areas are designed to sample intensively three activity loci in different portions of the site. Block excavation will allow detailed intra-site spatial analysis and provide significant horizontal exposures within which features might be exposed. The placement of these blocks will be contingent on the findings of the Phase III test units, in combination with the Phase II excavation results. It is anticipated that two blocks will be excavated into the components on the mid-range portion of the floodplain and that a third will be placed onto the near-stream (active) portion of the floodplain, where the deep 2C horizon component lies on top of a gravel bar deposit. Two potential locations for these block excavations, based on the Phase II investigations, are illustrated in Figure 3. As noted above, all excavation block placements will be determined in consultation with MDOT/SHA and the Maryland Historical Trust.

Following the mechanical removal of sterile or disturbed overburden, the units will be hand excavated. Excavation generally will be completed by troweling; shallow shovel skimming may be employed when fine-grained soils and low artifact densities (< 10 artifacts per 5 cm level) are encountered. Soils will be removed in 5 - 10 cm arbitrary levels within naturally occurring stratigraphic horizons. Within the finer-grained Ab and 1Cg horizons, soils will be removed in 5 cm levels within the natural strata. Within the coarse-grained sediments (e.g., gravel bar deposits) at the base of the floodplain, soils will be removed in 10 cm arbitrary levels within natural strata. Ten centimeter levels are appropriate in such deposits because it is felt that fine scale excavation will lose sight of the fact that the artifacts are likely to have moved vertically up to 5 - 15 cm in such coarse sands and gravels; in addition, hand excavation of 5 cm "spits" would be a costly exercise in such coarse materials. All excavated soil will be dry screened through 0.635 cm mesh. Units will be placed on the site map and labeled with their grid location. Standard soil nomenclature will be used to describe the site matrix; minimal pedological attributes recorded will be color and texture.

Horizontal provenience control will require a combination of lot collection and point proveniencing. As noted above, 5 - 10 cm levels within 1.00 m<sup>2</sup> will be the maximum collection unit for provenience lots. The use of 1.00 m<sup>2</sup> collection lots has been shown to be an effective sample unit at lithic processing/reduction camps in Anne Arundel County (Polglase et al. 1990, 1991, 1992); such a lot sample permits fine-grained horizontal pattern analyses, without excessive field excavation and laboratory processing costs. Classes of material that may be lot collected include flakeage (debitage and utilized flakes), non-feature fire-cracked rock, and any other non-diagnostic stone. All other classes of artifacts will be point provenienced within an x-y-z grid. In addition, distinct clusters of flakeage and cores will be classified as features; in such instances, all non-debitage will be point provenienced following the mapping and photographing of the feature.

Prehistoric features anticipated at Site 18HO206 include intact or "kicked out" hearths (Polglase et al. 1992), pits (Polglase et al. 1991), earth ovens (Neumann et al. 1991), and clusters of lithic debris (Polglase 1988). When encountered, features will be exposed completely, photographed, mapped, and then excavated completely. Features will be drawn in profile. A minimum of two liters of feature fill will be

retained for flotation; the remainder of all feature fill will be screened through 0.635 cm (1/4 in) or finer mesh. All soil retained for flotation from features will be floated using froth flotation procedures. Volumetric samples (1 - 2 liter) will be taken from all buried cultural strata; such samples will be used to provide macro-botanical material and micro-debitage.

Representative samples will be floated and the remainder will be water-screened through 0.0625 in mesh. The samples from buried strata will be collected by hand from the southwest corner of the excavation level; these collection methods have been developed in consultation with the project ethnobotanist. Up to five samples from each significant stratum will be floated to determine whether sufficient macro-botanical or artifactual material is present to warrant further analyses; all floated samples will be examined by the project ethnobotanist. If a level of redundancy is reached during analyses of a particular stratum, the remaining float samples will be waterscreened for cultural material, or will be retained for future study. Any unprocessed soil samples will be turned over to the Maryland Historical Trust with the artifact collection.

Samples of sediment for pollen and phytolith analysis will be taken from all features and from selected stratigraphic columns at the site. Additional samples will be collected from areas off the site, as a control for cultural activities. Samples will be collected following procedures described by Bryant and Holloway (1983) and Dimbleby (1985). A small portion of these samples will be submitted for an assessment of the quantity and quality of fossil pollen and phytoliths within the matrix. If these samples indicate the presence of micro-botanical data that can address important research questions, additional samples may be submitted for analysis. The results of any micro-botanical analyses will be discussed fully in an appendix to the final report and will be incorporated into a synthetic analysis of the site's environmental setting that includes a review of macro-botanical data as well.

#### Excavation of Burials

The discovery of Native American remains or grave related materials is unlikely. However, if human remains are encountered during the excavation, the contractor will contact MDOT/SHA immediately. Excavation of the human remains will proceed only with written permission from MDOT/SHA's representatives and in accordance with the consultation requirements of the Native American Grave Protection and Repatriation Act of 1990 (NAGPRA).

#### Laboratory Analysis

##### Theoretical Framework for Analyses

The theoretical paradigm that underlies these analyses is based on assumptions that lithic reduction episodes can be characterized relative to stages of production (Stahle and Dunn 1982), and that these stages of production (e.g., primary vs. secondary reduction) are relevant organization tools for describing prehistoric behavior. Such an organizational framework has been applied throughout the Mid-Atlantic region for the past 10-20 years to describe lithic reduction behavior. Replication experiments of lithic assemblages generally have proven the veracity of these organizational constructs on an experimental level (Stahle and Dunn 1982; Ammerman and Andrefsky 1982; Polglase n.d.). Analyses designed to address the requirements of this methodological framework generally focus upon careful morphological characterization of lithic material from distinct behavioral subsets (Polglase 1988).

In addition, this paradigm incorporates recent prehistoric research in the eastern United States that indicates that the distribution of various classes of lithic material can be used to delineate intra-site patterning of prehistoric behavior. This type of activity area analysis has proven successful in defining the organization of multi-component/multi-functional sites in the eastern United States in general (Yerkes 1987; Goodwin et al. 1990; Custer and Bachman 1986) and on Maryland's Western Shore in particular (Polglase et al. 1990;

Polglase and Neumann 1991b). Such analyses require the identification of all utilized flakes among the flaked stone assemblage (Neumann and Polglase 1992), the definition of subsets of utilized flakes through metrical analysis and statistical applications (generally parametric), and the determination of relationships between classes of flakeage and other artifact classes. The last step of these analyses generally is completed by running correlations (Chi-square or Pearson  $r$ ) between each class of artifact (e.g., debitage vs. utilized flakes; debitage vs. bifaces) within stratigraphically meaningful subsets; distinct associations of artifact classes are plotted on site maps and are discussed relative to their potential to describe the prehistoric behavior. These loci of lithic activity will be correlated with ancillary data (i.e., feature location, macro-botanical remains, blood residue results) to provide a holistic reconstruction of the past activities.

### Specific Analytical Treatments

All materials will be cleaned and rinsed, as necessary. Projectile points and other tools will be rinsed briefly, but not scrubbed; this cursory cleansing will permit initial temporal or functional ascriptions prior to subsequent blood residue analysis. Pursuant to the current requirements of the Maryland Historical Trust (August 1991), representative diagnostics will be labeled. The artifacts will be sealed in clean plastic bags, with provenience data recorded on the outside of each bag. Cultural materials will be separated into historic and prehistoric, should the former be present. Each item will be identified and classified by material, type, and distinguishing attributes. Specific analytical procedures are given below. General accessioning of the materials will use a dBase III+ laboratory program.

Debitage. All flaked stone items will be examined initially with a hand lens. Those flakes showing no evidence of subsequent modification will be classified as debitage; a 10 per cent random sample of these flakes will be examined at 10-20x using a dissecting microscope to determine if less demonstrable usewear is present. All flakes will be sorted by raw material type, weighed, then classified as primary cortex (>50 per cent dorsal face cortex), secondary cortex (<50 per cent dorsal cortex), or non-cortex. Each flake will be weighed and a maximum dimension measurement will be recorded. Distinctive data related to stages of reduction (i.e., evidence of core rejuvenation, platform preparation, etc.) will be noted where appropriate.

Cores. The maximum dimensions will be measured along each of the core's x-y-z axes. The weight will be taken and descriptive characteristics, such as heat-treatment, will be recorded. The raw material will be recorded while the amount of cortex covering the surface will be estimated. Each core will be placed into a generic descriptive category (e.g., tested cobble, bipolar, multi-dimensional, etc.).

During the Phase II evaluation of Site 18HO206 (as well as Site 18HO203), a distinctive class of "disk-shaped" cores was noted; such cores were found in association with the sites' gravel bar deposits and may represent a chronologically diagnostic form of this class of artifact. The delineation of such a diagnostic form may assist with the dating of other quarry-related sites that lack traditional diagnostic artifacts (i.e., projectile points). Cores defined as unifacial or "disk-shaped" will be described in the following manner: (1) percentage of cortex on unused face; (2) number of flake scars; (3) maximum length and width of flake scars; (4) "height" of the central portion of the core above the peripheral platform. Each example of core forms will be photographed and/or drawn to scale. If distinctive classes of cores are identified that may be chronologically diagnostic, the metrical range will be provided for class-defining attributes and a number of examples will be illustrated.

Metrical control on classes of cores is critical in determining their uses; for example, small pebble cores found at sites in Anne Arundel County could only be used to produce microliths for compound tools (Neumann and Polglase 1992). In contrast, the height and number of flake scars found on large unifacial cores can reveal the number of successful removals of large flakes from each core; such large flakes could have been used for expedient or curated tools, or could have been reduced further into bifaces. Thus, the identification of the classes of cores at the site reveals the "target" lithics (microlith, as opposed to flake core or biface) that directed the lithic procurement patterns. In addition, the presence of broken cores may



indicate episodes of reduction failure, which may have necessitated the procurement and early stage processing of other cores.

Groundstone/Pecked Stone. The maximum dimensions of each groundstone/pecked stone will be measured along the object's x-y-z axes. The weight will be taken and descriptive characteristics will be recorded. A generic use will be assigned. Samples of groundstone from distinct activity loci may be submitted for blood residue analysis.

Utilized/Retouched Flakes. The maximum dimensions of each utilized or retouched flake will be recorded along the object's x-y-z axes, and the weight will be taken. Raw material and the presence or absence of heat-treating also will be recorded. The edge angle of the working edge(s) will be measured, and the edge forms (i.e., class of retouch) will be described. A random sample of the edges of 25 - 40 per cent of the utilized flakes will be examined at 100-180x with a stereoscopic microscope to permit a more accurate characterization of past use. Each example of retouched tool forms will be photographed and/or drawn to scale. If distinctive classes of utilized or retouched flakes are identified, the metrical range will be provided for class-defining attributes and a number of examples will be illustrated.

Bifacial Tools. Bifacial tools include general bifaces, blanks, projectile point fragments, projectile points, and drills. For all bifaces, the length will be measured along the longest (y) axis parallel with the general edge orientation; width and thickness will be measured as the maximum dimensions in the resulting x-z plane. Weight, raw material, and presence/absence of possible heat-treating will be noted. The edge angles will be determined, and the edges will be examined at 100-180x with a stereoscopic microscope to characterize any usewear.

Examination of blanks, points, point fragments, and drills will include the above steps. In addition, any breaks on the object will be noted and the break angle in the x-y plane will be measured (with the y axis equalling 90°). The break edge will be examined for evidence of use. Determination of point type will begin with those described by Ritchie (1971) and Justice (1987), then refined based upon available regional literature (e.g., Fogelman 1988; Hranicky 1991).

Fire-Cracked Rock. Fire-cracked rock will be separated from other artifact classes. Those showing no other modification will be grouped together by provenience and weighed.

Archeobotanical Remains. All processing and analyses of macro-botanical samples will be undertaken by the project ethnobotanist (Ms. S. Justine Woodard, B.S.), who has demonstrated local expertise with floral remains from archeological contexts; Ms. Woodard has directed R. Christopher Goodwin & Associates, Inc.'s ethnobotanical research in the Mid-Atlantic and the southeast for nearly two years, including Phase II evaluation of prehistoric and historic sites and Phase III data recovery.

Two liter volumetric samples will be taken from all excavated features and floated. Each sample will be sorted into light and heavy fractions. Some fragments of charred wood and other plant materials usually are present in the heavy fraction; these will be transferred to the respective light fractions. Carbonized plant remains will be size-sorted using a 2 mm geological sieve. Uncarbonized, modern plant debris will be removed after sieving. Carbonized plant material will be sorted, counted, and weighed by material class. Materials that passed through the sieve (the residual fraction) will be scanned for seeds and other plant parts lacking in the large sized fraction.

Detailed taxonomic analyses will be done for subsamples of wood charcoal, for all nut shell and shell fragments, and for all carbonized seeds and seed fragments. Subsamples of wood charcoal will consist of 20 randomly selected fragments, unless fewer than 20 specimens occurred in the sample; the examination of 20 specimen samples of charcoal is considered the most cost-effective method to characterize a large charcoal assemblage (Pearsall 1989). Taxonomic identifications will be made for all charcoal fragments in samples with less than 20 specimens. Uncarbonized seeds also will be sorted from each sample and

tabulated on a presence/absence basis. Identifications will be based on comparative collections as well as on various keys and manuals (e.g., Harlow 1959; Hillman and Henry 1935; Martin and Barkley 1961; Montgomery 1977; Panshin and De Zeeuw 1980; Schopmeyer 1974).

Micro-botanical Analyses. Reconstruction of prehistoric environments can be assisted through the analysis of pollen residues from subsurface contexts (Dimbleby 1985; Bryant and Holloway 1983) or through the examination of phytoliths (Seward 1992). Establishment of the paleoenvironmental setting of Site 18HO206 will be based on relevant research and regional models, analysis of plant macrofossils secured from the site, and archeological palynology and phytoliths, if appropriate.

Sampling for pollen or phytoliths will require small (>0.25 liter) hand samples from the site's soil column, and from cultural strata encountered during the archeological investigations; all necessary field samples will be collected. Up to six samples from the site will be screened initially to determine whether sufficient fossil pollen or phytoliths are present to address Research Questions 5 and 6 (see above); such analyses will be undertaken by a professional research facility that specializes in these investigations. If adequate data are identified during the screening process, a comprehensive pollen spectra for the site may be constructed from the remaining field samples, and a successional vegetative series and climatological history may be established within a temporal and cultural framework; the completion of additional pollen/phytolith analyses beyond the above-cited screening of six samples will be determined by MDOT/SHA in consultation with the Maryland Historical Trust. Any unused soil samples will be turned over to the Maryland Historical Trust with the site's artifact assemblage and the technical documentation.

Radiocarbon Dating. Up to four radiocarbon samples will be assayed by Beta Analytic, Inc. Samples will be selected that are representative of the Ab horizon, the gravel bar component, and any earlier organic deposits that may be present.

### **Geomorphological Analyses**

Two 10 m backhoe trenches will be excavated between the drainage and the terrace. A professional geomorphologist will prepare detailed profiles of one long wall in each of these trenches. He also will direct the collecting of appropriate samples for analysis and dating from these trenches. Appropriate tests (i.e., grain size) will be undertaken from each sample. A technical letter report will be prepared that presents the results of the geomorphological investigations. This letter report will be included as a technical appendix in the Phase III technical report. In addition to presenting a summary of the geomorphological history of the property, the geomorphologist will synthesize the results of the paleobotanical analyses into an environmental reconstruction of Site 18HO206 during its periods of occupation. This letter report will also present a review of the relationship of this site to other areas within the Deep Run drainage system.

### **Draft Report Preparation**

A high quality technical report and interpretive overview that integrates the new field data with those obtained earlier will be prepared. The report will present information including, but not limited to:

- (1) Important information needs that have been addressed through performance of this contract, and integration of the work results into a state or regional synthesis.
- (2) How data recovered during this contract contribute to the understanding of cultural resources in the Patapsco River drainage and Maryland's Western Shore.
- (3) How data recovered during this contract contribute to our understanding of the economic and technological prehistory of the region.

A balanced, interdisciplinary perspective will be presented in the report. Professional level investigations and reporting will define past human behavior in relation to chronological, geomorphological, pedological, ecological, and geographical features. Five copies of the draft report will be prepared.

### **Final Report Preparation**

A final technical report will be prepared that addresses all of the comments of MDOT/SHA and the Maryland Historical Trust. The Final Report will be a single-spaced, high quality product. Fifty copies of the final report will be prepared; ten copies will be furnished by the contractor. As part of MDOT/SHA's public dissemination requirements, copies of the final report will be deposited at the following local repositories: the Maryland Historical Trust, the National Park Service (National Capital Region), the Baltimore Center for Urban Archaeology, the St. Mary's City Commission, the Anne Arundel County Office of Planning and Zoning (Dr. Alvin Luckenbach), The American University, the Catholic University, and the University of Maryland.

### **Disposition of Records and Materials**

All materials produced as a part of the Phase III data recovery will be prepared for curation in accord with the interim minimum guidelines set forth by the Maryland Historical Trust and with 36 CFR 79. These materials will be turned over to the Maryland Historical Trust for permanent curation.

### **Public Involvement and Interpretation**

Public participation in Phase III mitigation is governed by Federal regulations (36 CFR Part 800). "Public participation," as presented in 36 CFR 800 is an opportunity to take public interest into account during the planning phases. Thus, presentation to the interested public of what is going on during Phase III data recovery is appropriate. This can be achieved by a public lecture and presentation of the research effort; it could also be achieved through constructive use of the print and visual media.

The public interpretation program for the mitigative efforts at Site 18HO206 will include: (1) the release of briefing materials to the local press; (2) the presentation of a scholarly article in a professional journal; (3) the preparation of a brief public brochure that describes the results of the archeological investigations in layperson's terms; and (4) the presentation of a research paper at a regional or national professional meeting.

The public brochure will emphasize stone tool technology and the important role of quarry sites in prehistoric procurement and lithic reduction strategies. However, the importance of this information will be presented in a non-technical format designed to brief the lay public on the range of prehistoric sites and stone artifacts that are found in the region; in other words, the brochure will provide an understanding of the importance of "non-village/non-Woodland" prehistory in the region. The results of field and laboratory investigations at site 18HO206 will be presented in the form of graphic models of procurement and reduction strategies and placed in a regional context.

The brochure will be illustrated (black & white) with photographs and drawings and will be up to 12 pages, including front and back cover. A draft copy of the brochure will be submitted to the Maryland Historical Trust for comment. Up to 250 copies of the final, approved brochure will be prepared. The brochure's final distribution list will be determined by MDOT/SHA in consultation with the Maryland Historical Trust.

## Coordination and Requirements

The Contractor will adhere to the professional staffing requirements set forth in Title 36 of the Code of Federal Regulations, which are compatible with the standards recommended by the Maryland Historical Trust. The Contractor will adhere to the standards for archaeology published in the Federal Register by the National Park Service (48:190:44716-44742). A *curriculum vitae* for the proposed Principal Investigator is enclosed. The Principal Investigator will be responsible for the technical quality of the work.

The contractor will provide the Maryland Historical Trust with adequate notice of the dates of the archeological fieldwork so that a field visit can be scheduled. If, in conjunction with construction activities, previously unidentified archeological properties are found which appear to meet the National Register criteria, a plan for archeological data recovery, or other appropriate treatment will be developed and implemented in consultation with the Maryland State Historic Preservation Officer, pursuant to 36 CFR 800.11. Should such unanticipated discoveries take place, a modification to the Phase III budget may be required.

At the request of MDOT/SHA, a Management Summary may be prepared following completion of the field investigations. This Summary may be submitted to the Maryland Historical Trust to notify that office that the relevant requirements of this Mitigation Plan have been completed.

## Schedule

Notice to proceed	4 April 1994
Mobilization/Site Preparation	11-15 April 1994
Fieldwork	18 April - 20 May 1994
Submission of Management Summary	25 May 1994
Construction Proceeds	1 June 1994
Processing and Analysis	23 May - 5 August 1994
Submission of Draft Submittals (Draft Report and Draft Brochure)	21 October 1994
Government Review	24 October - 16 December 1994
Final Submittals and Turn Over	10 February 1995

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## R. CHRISTOPHER GOODWIN & ASSOCIATES, INC.

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### MEMORANDUM

TO: Ms. Mary F. Barse  
State Highway Administration

FROM: Jeff Maymon/Chris Polglase  
R. Christopher Goodwin & Associates

DATE: 27 July 1994

RE: **Block Placement for Phase III Archeological Mitigation at the Beehive Site (18HO206) - Maryland Route 100 Wetland Mitigation, Howard County, Maryland.**

R. Christopher Goodwin & Associates, Inc. is pleased to provide the Maryland Department of Transportation State Highway Administration (MDOT/SHA) with this plan for the placement of the equivalent of three 4 x 4 m excavation blocks for the fourth part of the Phase III Archeological Mitigation at the Beehive Site (18HO206).

Excavation of the additional test units (three 1 x 2 m and ten 1 x 1 m test units) is complete, a single backhoe trench has been excavated, and the plowzone has been stripped from a 20 x 40 m area on the terrace. Dr. Frank Vento has examined all of soil profiles and taken pedological samples from representative deposits for granulometric and geochemical analyses.

The stripped area was carefully shovel scraped to the base of the plowzone and examined for features. Although several soil stains were identified, the excavation of cross-sections revealed that they were tree root disturbance. The artifacts recovered during the shovel scraping and in the backdirt were concentrated in the western portion of the stripped area. These included 9 quartz and quartzite mid- to late stage bifaces, a rhyolite simple shaft perforator, and four rhyolite square-stemmed points consistent with later Late Archaic point types, such as Bare Island and Savannah River types.

Examination of exposed profiles in the backhoe trench and test units indicate that the project area is characterized by three alluvial terraces: (1) a T0 lying next to the stream and occasionally interrupting the Ab horizon in test units placed on the extreme western portion of the site, (2) a T1 terrace occupying much of the area identified as the "mid-range floodplain" in the Phase II report; and (3) an eroded T2 terrace beginning on the eastern margins of the area possessing the Ab and comprising much of the stripped area. Based on his previous work on sites in similar settings in Howard, Baltimore, and Anne Arundel Counties, Dr. Vento estimates that the T1 terrace would have begun aggrading around 6,000 B.P., as the gradient of the stream was lessened due to sea level rise. Stabilization of the floodplain resulting in the formation of a well-developed A horizon (the Ab horizon) probably occurred during warm-moist Neo-Atlantic climatic phase (900 A.D. - 1250 A.D.). Increased stream flow during the cold-wet Pacific climatic event and historic land usage resulted in the deposition of 60-90 cm of sediment on top of the A horizon, which effectively sealed it from historic disturbances. This pattern of terrace formation is repeated on small streams between 75 and 90 ft above sea level across much of the near Fall Line area.

The boundary between the T1 and T2 was revealed in the eastern end of the backhoe trench. There the gravels rapidly rise to a point immediately beneath the Ab horizon and then gradually slope downward toward the east. Dr. Vento indicates that this is probably the remains of a natural levee behind which finer sediments on top of the gravels thicken and upon which the Ab horizon formed. The T1 terrace is characterized by a thin to non-existent Ab and Bwb horizons lying above the gravels on its western margins, thickened (30 to 45 cm) Ab and Bwb horizons in the central portion of the terrace, and rapidly thinning horizons as it rides onto the margin of the T2 terrace.

The test unit excavations indicate the presence of discrete clusters of lithic material across the site, primarily within the "mid-range floodplain" at the site. Field counts of artifacts were as high as 890 in one test unit (Test Unit 9). Three other units produced over 400 artifacts and five units produced under 20 artifacts. The Ab and Bwb horizons were identified in all of the test units except Test Units 5 and 6. The Ab horizon was probably consumed by the plowzone in Test Unit 5 and by lateral bank erosion in Test Unit 6.

The three possible components distinguished during Phase II testing do not appear in all of the test units. Although multiple peaks in the artifact frequencies in several of the units suggest that multiple occupations are present, those associated with the Ab and C horizons are less well defined. Although a frequency peak associated with the Ab horizon was defined in four Phase III test units (3/4, 9 and 10) during the Phase III and seven Phase II test units (1/2, 4, 6, 7, 12/13), relatively few artifacts were recovered from them. Most of these units average 10-20 flakes from the Ab. The frequency peaks associated with the gravelly C horizon have a tendency to be somewhat flat in form and the edges of a high percentage of debitage within this horizon are rounded. These patterns suggest that secondary deposition of material within the C horizon (gravel) may be a greater problem than previously thought.

The results of the Phase III work to date indicate that the blocks should be placed to recover data with greatest degree of integrity and that exploration of the Ab and C horizon components should be best combined with more intensive examination of the occupations contained within the Bwb horizon. Two alternative plans are proposed below. The first focuses the mitigative efforts on those activity loci which lie within the portion of the site with the highest degree of integrity. The second provides for additional work on the eastern portion of the T1 terrace, where Phase II testing identified a potentially distinct component within the gravel C horizon.

#### Plan "A"

We propose to place two 4 x 4 m blocks and one 2 x 4 block in the vicinity of test units located in the center of the T1 terrace where the stratigraphic separation between components is considered to be the greatest and the integrity of those deposits is unquestionable. Well-defined components within Test Units 3/4, 9, and 15 produced the largest and most diverse assemblages from the site. Additional components associated with the Ab and C horizons are also present in some of these units. Another 2 x 4 block will be placed adjacent to Phase II Test Units 12/13, in which a feature had been encountered.

One 4 x 4 m block would be located adjacent to Phase III Test Unit 9, which produced approximately 890 artifacts concentrated within the Bwb horizon. These included primary and secondary debitage, core fragments, several tested cobbles, and a fragment of a groundstone axe that had been reused as a



Ms. Mary Barse  
27 July 1994  
Page Three

hammerstone. A small frequency peak was identified within the Ab and a somewhat flat peak is associated with the C horizon in this test unit. It is likely that a block in this location would provide data regarding early stage reduction.

A second 4 x 4 m block would be placed adjacent to Phase III Test Units 3 and 4. A small reduction area was encountered at approximately 100 cmbs in this unit. Among the artifacts recovered were secondary and biface thinning flakes, flaked cobbles, and a biface fragment. Based on the presence of late stage reduction debris and a mid to late stage biface within this reduction locus, this area is considered the most likely location for recovery of diagnostic materials within the stratified portion of the site. A weakly defined concentration of lithic material was encountered within the Ab horizon within these units as well.

A 2 x 4 m block would be placed adjacent to Phase III Test Unit 15. In addition to a well defined artifact frequency peak deep within the Bwb horizon, this unit produced a well formed early stage biface, many core fragments, and several tested cobbles. The component also appears to be located at the base of the Bwb, on top of the gravel horizon. It is possible that this reduction event represents an earlier occupation than those defined in Test Units 3/4 and 9.

A second 2 x 4 m block would be placed on the northern edge of Phase II Test Units 12 and 13. The presence of a feature in Test Unit 13 and a frequency peak associated with the Ab horizon necessitates that we examine this area with a block. However, this area is characterized by relatively low artifact frequency.

#### Plan "B"

A total of four 2 x 4 blocks would be placed across the site following the same criteria as found in Plan "A". Blocks would be placed in the vicinity of Phase III Test Unit 9, Phase III Test Unit 15, Phase II Test Units 12/13, and south of Phase II Test Units 1/2. In addition, the planned 4 x 4 m exposure would be excavated around Phase III Test Units. This plan would allow for greater exposures into the gravelly C horizon, which had been characterized as an intact component during the Phase II investigations, as well as intensive sampling of the Ab and Bwb deposits on the T1 terrace. This would provide coverage of each of these important areas of the site.

Current data indicates that much of the prehistoric material found in the gravelly deposits on the T1 terrace are rounded and have been redeposited through lateral channel migration. Those deposits also are currently saturated and pose severe limitations for in-depth study. Goodwin & Associates, Inc. proposes to excavate all test units on the T1 terrace a minimum of 15 cm into the gravel deposits. In addition, one unit within each 2 x 4 m block will be excavated to a maximum depth of 50 cm into the gravels. This sampling will permit a characterization of the redeposited materials.

If you have any questions related to this plan or the project in general, please feel free to contact us. We are at your service.

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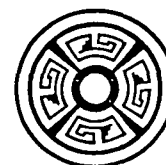
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